

Offset Proposal

Reserve 35302 for
Shire of Esperance Strategic Purpose Permit CPS 9341/1



Report compiled by Shire of Esperance Environmental Team:
Julie Waters – BEnvSc (Hons), Environmental Coordinator
Katherine Walkerden– BSc, MEnvSc, Environmental Officer

June 2022



1 Summary

The western portion of Reserve 35302 (Lot 1985 Pln:91222) totalling 116.75 ha is proposed as a land acquisition offset involving a change of vesting from gravel to conservation to offset residual environmental impacts of CPS 9341/1.

2 Area Description:

Reserve name:	Un-named reserve Crown Reserve	Reserve number	35302
Location number:	Lot: 1985 Pln: 91222, Gibson	Shire:	Esperance
Vesting:	Shire of Esperance	Nearest towns:	Gibson and Scaddan
Current Purpose:	Gravel	Nearest road:	Fleming Grove Road
Area of Reserve:	53.9303ha northern portion 62.8284ha southern portion	Map reference:	387079m E 6284992m N
NRM Region:	South Coast	IBRA Sub Region:	Esperance Plains



Figure 1. Map of section of Reserve 35302 to be vested for conservation.

2.1 Asset Values:

Landform	The area is mostly gently undulating plain, this transitions down a minor escarpment to the open depressions and ephemeral water courses in the northern part of the reserve. The southern portion of the reserve also contains the edges of another saline creek system.
Soils	The soils in the southern parts of the reserve are made up of gravelly, yellow mottled duplex soils with <30cm of sand over gravel layer at 30-80cm. There are some parts of Solonetzic, yellow sodic, alkaline, duplex soil and the northern soils near the salt lakes contains salt affected soils with surface salt crusting.
Geology/Regolith	Tertiary Marine sediments of the Pallinup formation over granite and gneiss bedrock and Tertiary marine sediments with aeolian carbonate rich deposits in places.
Threatened and Priority flora	<p>There were 53 threatened and priority flora species with 20km radius of R35302. The results of the desktop flora survey are included in Appendix 6.2.</p> <p>The critically endangered <i>Eremophila glabra</i> ssp. Scaddan was found <5m from the reserve and thus the reserve contains critical habitat for this species.</p> <p>Nine species of priority flora were recorded during the site visits; <i>Darwinia</i> sp. Gibson P1, <i>Daviesia pauciflora</i> P3, <i>Conostephium marchoriatum</i> P3, <i>Kunzea salina</i> P3, <i>Melaleuca dempta</i> P3, <i>Persoonia scabra</i> P3, <i>Austrobaecka uncinella</i> P3, <i>Brachyloma mogin</i> P3, and <i>Melaleuca fissurata</i> P4.</p>
Threatened ecological communities	The Proteaceae Dominated Kwongkan Shrubland TEC is present within 86.747ha of the reserve.
Critical Habitat	The site contains critical habitat for the Critically Endangered flora species <i>Eremophila glabra</i> ssp Scaddan.
Threatened fauna	None recorded but potential feeding ground for Carnaby's cockatoo. The site contains a large variety of suitable species, and is 1.5km west of a large pine plantation.
Native Fauna	The reserve was very active with a variety of bush birds and the tell-tale signs of mammal species such as echidna, kangaroo and emu. Additionally, where gravel extraction has created low-lying areas, which seasonally hold water, a number of different frog species were audibly observed.

Vegetation associations	<p>The site is located within the Esperance Plains (Esp2) IBRA region and the Recherche subregion.</p> <p>The vegetation of the site contains two vegetation units as mapped by Beard. The majority of the reserve falls within the ESPERANCE 47, with the salt lake systems at the northern and southern extent of the Reserve being ESPERANCE 41.</p> <ul style="list-style-type: none"> • ESPERANCE 47 – Shrublands; tallerack mallee-heath Eucalyptus open mallee shrubland / Lambertia mixed shrubland / Andersonia mixed heath • ESPERANCE 41 - Shrublands; teatree scrub; Melaleuca open shrubland
Catchment	Dalyup River / Lake Gore catchment.
Aboriginal evidence	None identified during desktop or field survey.
European evidence	<p>This site has been previously used for the purpose of gravel extraction with approximately 70% of these western sections being previously impacted by this activity. The majority of the affected areas have been rehabilitated through ripping allowing for natural regeneration, this has been highly successful, and many areas are almost completely unrecognisable as previous gravel extraction areas. A calculable area of 5.399 hectares was assessed as Degraded or Completely Degraded, though most of this area can be easily revegetated. Reserve 35302 is divided north and south by Fleming Grove road, and is abutted to the east by the Esperance to Kalgoorlie railway line. The western portions of Reserve 35302 have farm land along the majority of their western and southern boundaries used primarily for cropping.</p>
Recreational evidence	None identified during desktop or field survey.
Fire	No burn history for the site. The fire history of this site appears to be long unburnt with no obvious signs of any recent fire activity. The salt lake system to the north and south probably provide natural buffers to incoming fire.
Other Assets	Fencing in good condition is present along the freehold property boundary on the west and south of the reserve.

Extractive activities

Reserve 35302 has historically been used for gravel extraction with extraction activities occurring since at least 1998. Available aerals were examined to provide an estimated timeline of clearing and rehabilitation works. These estimates are quantified in Table 1.

Table 1. Estimate of clearing timeline within Reserve 35302 based on historic aerals.

Photos used: (Esperance_3230) February 1998, January 2007, February 2013, March 2018)

Age of Clearing & Rehabilitation	Total (hectares)
Never cleared	49.430
Cleared prior to 1998, Rehabilitated before 2007	31.582
Cleared prior to 1998, Rehabilitated before 2013	0.717
Cleared and Rehabilitated between 1998 and 2007	9.063
Clear in 2007, Rehabilitated before 2013	10.897
Clear in 2007, Rehabilitated before 2018	8.022
Clear in 2013, rehabilitated before 2018	2.795
Clear	4.306



Figure 2. Map providing estimates of when clearing and rehabilitation works have historically occurred.

Vegetation communities

The vegetation on the ground consists of three vegetation communities:

- Vegetation Type A: Open Tallerack Mallee-heath and *Lambertia inermis* over mixed heath – 19.033ha
- Vegetation Type B: *Banksia armata* dominated low heath with diverse Ericaceae, Myrtaceae and Proteaceae heath – 68.605ha
- Vegetation Type C: *Melaleuca hnatiukii* and *Melaleuca brevifolia* shrubland over *Austrostipa juncifolia* and open samphire - 24.590 ha



Figure 3. Map of vegetation types present within the proposed offset.



Figure 4. Vegetation type A: Open Tallerack Mallee-heath and *Lambertia inermis* over mixed heath. Photo taken on the 16/06/2022 by Katherine Walkerden. Photo taken at GDA 94 Zone 51 387489.2M S 6284957.7M N Facing West.



Figure 5. Vegetation type B: *Banksia armata* dominated low heath with diverse Ericaceae, Myrtaceae and Proteaceae heath. Photo taken on the 08/06/2022 by Katherine Walkerden. Photo taken at GDA 94 Zone 51 386932.0M S 6284419.3M N Facing West.



Figure 6. Vegetation type C: *Melaleuca hnatiukii* and *Melaleuca brevifolia* shrubland over *Austrostipa juncifolia* and open samphire. Photo taken on the 16/06/2022 by Katherine Walkerden. Photo taken at GDA 94 Zone 51 387361M S 6285484M N Facing West.

Vegetation condition:

The vegetation condition within the reserve ranged from Pristine to Degraded (Keighery 1994). The untouched vegetation around the salt lake system in the north and a large contiguous area of Vegetation Type A were considered pristine as the vegetation was intact with no disturbance, no weed issues and having a large contiguous area.

Areas where gravel had been previously extracted ranged from Excellent; where there has been substantial regenerative recovery with a good mix of species, down to Degraded; where there has been no real vegetative recovery and obvious weed issues representing a significant barrier to recovery.

Several access tracks and laydown yards have remained un-rehabilitated, making up a large majority of degraded and completely degraded vegetation. These areas can be ripped for rehabilitation after approval of the offset site.

The map of the vegetation condition below has been worked out based on a combination of desk top analysis and ground survey.

Table 2. Quantifying vegetation by vegetation type and condition in hectares
(NB: Vegetation type X was too degraded to be able to be mapped as a vegetation community)

Vegetation Type	Pristine	Excellent	Very Good	Good	Degraded	Completely Degraded	Total
A	12.012	4.982	2.021	-	<0.001	0.017	19.033
B	-	56.010	11.721	-	0.873	<0.001	68.605
C	23.337	1.253	-	-	-	-	24.590
X	-	-	-	-	0.832	3.675	4.508
Total	35 349	62 272	13 742	-	1 705	3 693	116 763

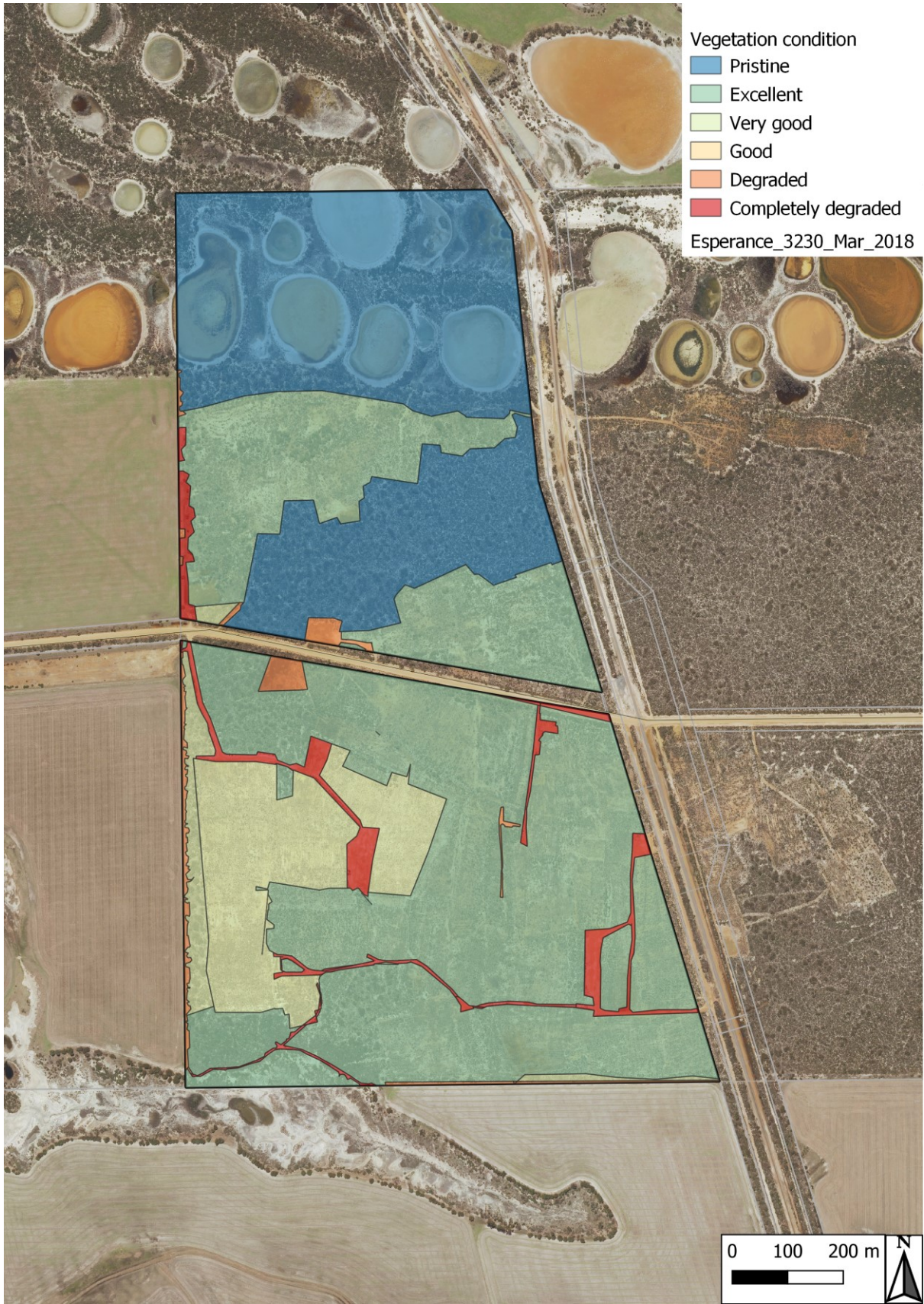


Figure 7. Map of Vegetation condition within the proposed offset area.



Figure 8. Pristine condition: This photo shows the large contiguous uncleared section of the Proteaceae Dominated Kwongkan Shrubland community with no signs of disturbance. Photo taken at GDA 94 Zone 51 387376.2M S 6285205.7M N Facing West.



Figure 9. Excellent Condition: This photo the Proteaceae Dominated Kwongkan Shrubland with disturbance from previous gravel extraction unnoticeable.



Figure 10. Very Good Condition: Rehabilitated gravel pit with some minor bare areas, the area was highly diverse with vegetation structure restored, disturbance was still obvious, over time the condition of these areas is likely to return to Excellent Condition. Photo taken at GDA 94 Zone 51 386945.3M S 6284348.9M N Facing North West.



Figure 11. Completely Degraded Condition: Photo showing track which has not been rehabilitated, this track and other similar tracks could be easily rehabilitated, unless they are kept for fire or management access. Photo taken at GDA 94 Zone 51 386945.3M S 6284348.9M N Facing East.

Threatened Ecological Communities

The area was identified in the desktop survey as containing the 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia'.

As the area has been cleared for gravel extraction then regenerated the method of determination of whether the area met the definition of 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia' used as per EPBC Approved Conservation Advice for Proteaceae Dominated Kwongkan Shrublands of the southeast coastal floristic province of Western Australia, was if two or more diagnostic species were present at the site. Areas where rehabilitation age was older or areas that did not contain previous gravel extraction the standard 30% proteaceous cover over all layers was used. A large proportion of the assessed reserve area (approximately 78%) meet the 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia' definition.

Table 3. Quantifying the 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia' by condition in hectares

TEC/PEC	Total (Pristine to Good)	Pristine	Excellent	Very Good	Good	Degraded (Not Kwongkan)	Completely Degraded (Not Kwongkan)
Kwongkan TEC Vegetation Types A & B	86.747	12.012	60.992	13.742	-	0.872	0.018



Figure 12. Map of the 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia' Threatened Ecological community within the proposed offset site.

Threatened and Priority Flora

A total of nine priority listed flora have been found within the reserve, and a critically endangered eremophila (known from a total of 5 populations of less than 50 plants) was present 4 metres from the reserve.

***Eremophila glabra* ssp. Scaddan – Critically endangered** – A small population of this species was found immediately east of the northern reserve, one of the two plants were 4 metres from the reserve within the neighbouring undeveloped Road Reserve. This reserve likely provides critical habitat for this species.

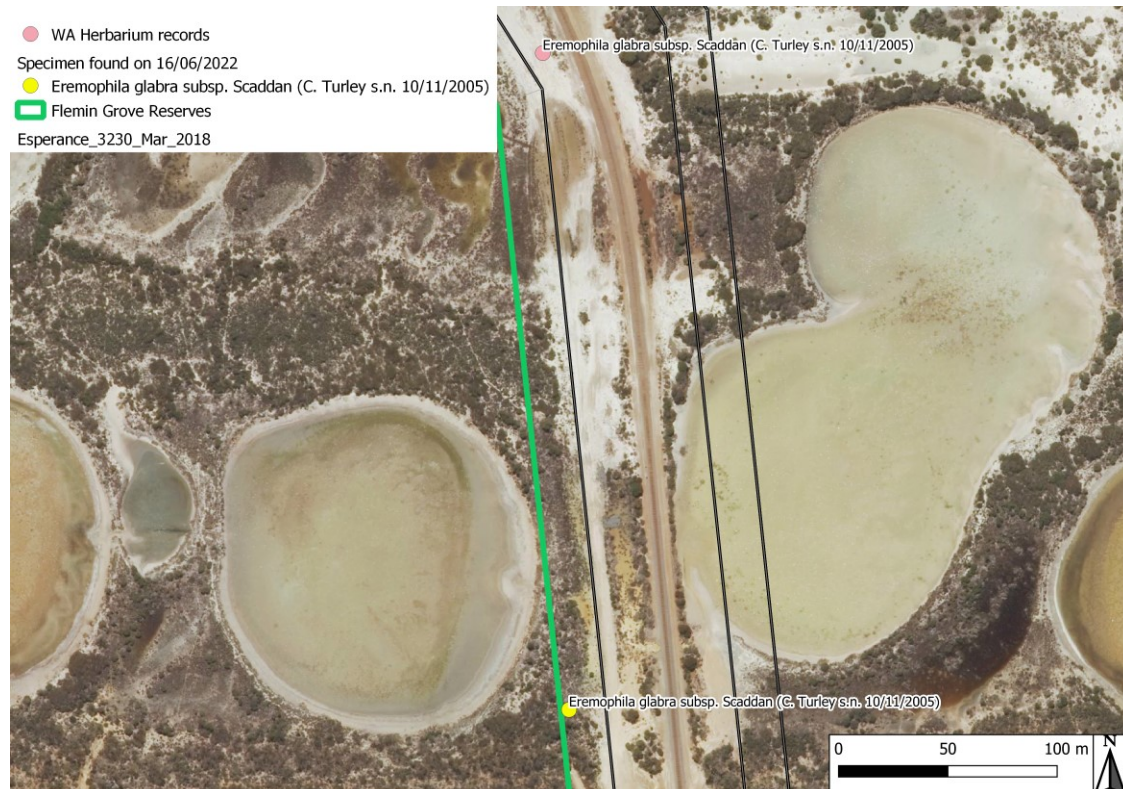


Figure 13. Location of *Eremophila glabra* subsp. Scaddan specimens near the proposed offset site, Pink accurately represents a single plant (PERTH 09364943), yellow represents a single specimen found on the 16/06/2022.

***Darwinia* sp. Gibson – P1** – Hundreds of plants were found on the embankments of the salt lakes within the northern section of the reserve. A pre-existing population is recorded 200 metres north of the reserve and these specimens are an extension of that population. Plants were also found along the saline watercourse at the southern section of the reserve. The plants were flowering and have been forwarded to the W.A Herbarium. Collector numbers were KSW7322 (Northern population) and KSW7622 (Southern population).

***Austrobaeckea uncinella* – P3** - Plants were locally common around embankments of the salt lakes within the northern section of the reserve. Plants were also found along the saline watercourse at the southern section of the reserve. The plants were fruiting and have been forwarded to the W.A Herbarium. Collector numbers were KSW7422 (northern population), KSW8122 (southern population).

***Conostephium marchantiorum* – P3** – Found in the gravel pit rehabilitation within the southern section of the Reserve and near the salt lake within the northern section of the reserve. A pre-existing population was present 120 metres to the east of the reserve. The specimens were flowering and have been forwarded to the WA Herbarium. Collector numbers were KSW7522 (Northern section) and KSW8522 (Southern section).

***Daviesia pauciflora* – P3** – Was found by Wayne Gill (previous DBCA Flora Conservation Officer, casual Environmental Officer Shire of Esperance) during a 2017 survey of the site. Specimens were not forwarded to the WA Herbarium. This species could not be relocated in 2022.

***Kunzea salina* - P3** - Plants were locally common around embankments of the salt lakes within the northern section of the reserve. Specimen were sterile and will be collected and sent to the WA Herbarium for formal identification and confirmation in spring.

***Melaleuca dempta* – P3** – Was found on the salt system on the northern part of the reserve. A specimen has been sent to the WA Herbarium and is awaiting formal identification. Collector's number was KSW7922.

***Persoonia scabra* - P3** – The plant had a scattered distribution throughout the reserve with 14 plants counted though only a small section of the reserve was searched. A fruiting specimen from the southern section of the reserve was sent to the WA Herbarium and is awaiting formal identification. Collector number was KSW7122.

***Brachyloma mogin* - P3** – Found in previously undisturbed vegetation in the northern and southern parts of the reserve near but not within salt lake vegetation. Two specimens have been sent to the WA Herbarium and are awaiting formal identification. Collector numbers were KSW8022 (Southern population) and KSW8422 (Northern population).

***Melaleuca fissurata* P4** - Was found near the salt system on the northern part of the reserve. A specimen has been sent to the WA Herbarium and is awaiting formal identification. Collector's number was KSW7822.

Carnaby's Black-Cockatoo

As the site contains Proteaceae Dominated Kwongan Shrubland, these areas are also likely to also be potential feeding habitat for the Endangered Carnaby's Black-Cockatoo, one of the fauna species known to feed on Proteaceae species for their nectar, pollen and fruits. Although they were not observed as present during the survey, the large number of food source plants would ensure that this species would utilise the resources within this reserve from time to time. There is a large 130 hectare pine plantation 1.5km east of Reserve 35302, and this combination of foraging habitat and nearby roosting habitat improves the value as habitat for the species.

Regional Context

The reserve is located approximately 35 km north of Esperance along Fleming Grove Road. The regional landscape is highly fragmented due to agricultural clearing with numerous waterbodies and lakes scattered across the area.

The area is listed as containing Beard vegetation association 41 & 47. Beard VA 47 has been highly cleared with only 24% of its pre-European extent remaining within the Shire of Esperance additionally only 1% of its pre-European extent is currently within land protected for conservation. VA 47 would greatly benefit from the current offset proposal due to its extremely low extent within protected lands.

Table 4. Vegetation association by percentage of pre-European extent remaining

Vegetation association	VA 41 - Shrublands; teatree scrub	VA 47 - Shrublands; tallerack mallee-heath
Pre European extent remaining	93.85%	35.86%
Pre European extent remaining within the Shire of Esperance	13.43%	24.43%
Pre European extent remaining within Esperance Plains IBRA region	40.42%	35.05%
Pre- European extent in land protected for conservation	11.19%	17.80%
Pre- European extent in land protected for conservation (Esperance Plains IBRA Region)	20.95%	18.32%
Pre- European extent in land protected for conservation (Shire of Esperance)	25.91%	1.00%

3 Existing Threats (to nature conservation values):

Altered hydrology	Unclear, although some areas of the reserve are undoubtedly wetter due to a lowering of the soil profile associated with gravel extraction. This has changed the vegetation composition in some areas.
Introduced plants	Weeds recorded include african love grass, Victorian tea tree, Pinus pinaster, Acacia pycnantha, as well as a small patch containing garden weeds from a trailer load of dumped garden refuse (lavender, succulents and rose pelargonium). Overall (apart from along the agricultural boundary on the western side) the weed burden within Reserve 35302 is low.
Introduced animals	Rabbits, foxes, cats are likely.
Problem native plants	N/A

Problem native animals	N/A
Disease	There were no signs of dieback present within the reserve and there were no DIDMS records of dieback disease within the reserve. The site was classified as Low Confidence Dieback Uninfested in 2008.
Detrimental regimes (fire)	N/A
Competing land uses	The eastern boundary of Reserve 35302 (Lot: 1985 Pln: 91222) is used as an access track for rail maintenance.
Timber cutting / clearing	None observed.
Gravel	Previous gravel extraction with mostly excellent rehabilitation.
Rubbish	Some minor (approximately 1 trailer load) garden dumping in south part of reserve
Other illegal activities	Some minor rubbish dumping (approximately 1 trailer load) in south part of reserve
Grazing	None observed. Fences are in good condition.
Beekeeping	None observed or recorded on GIS databases.
Utilities	Rail line to east of area, Fleming Grove road dissects the reserve.
Recreation	None
Drains	None
Adjoining land use	Cleared agricultural land to west and south. Vegetated Crown reserves to the east. Vegetated freehold land to the north.
Lack of habitat	Reserve 35302 contains suitable habitat value for a variety of bird, mammal, reptile and insect species.

Weeds

Weeds were confined to the disturbed areas on the shared western boundary with the farmland. These contained a variety of annual grasses and Brassicaceae weeds including African Love Grass (*Eragrostis curvula*) and Perennial Veldt Grass (*Ehrharta calycina*).

In a 2017 inspection of the reserve two individual Victorian Tea-Tree (*Leptospermum laevigatum*) were observed in the northern section of the reserve, but these were not relocated in 2022. On the northern side of Fleming Grove road there was a small section of approximately ten Golden Wattle (*Acacia pycnantha*) which have been ringbarked and sprayed in June 2022. Two *Pinus pinaster*, and a small area where a trailer load of garden refuse had been previously dumped including succulents, lavender and rose pelargonium has all been sprayed and hand pulled in June 2022. These locations will be

monitored for regrowth. Much of the substantial area of regenerated gravel pits are weed free, which has allowed for regenerative success over much of the area.

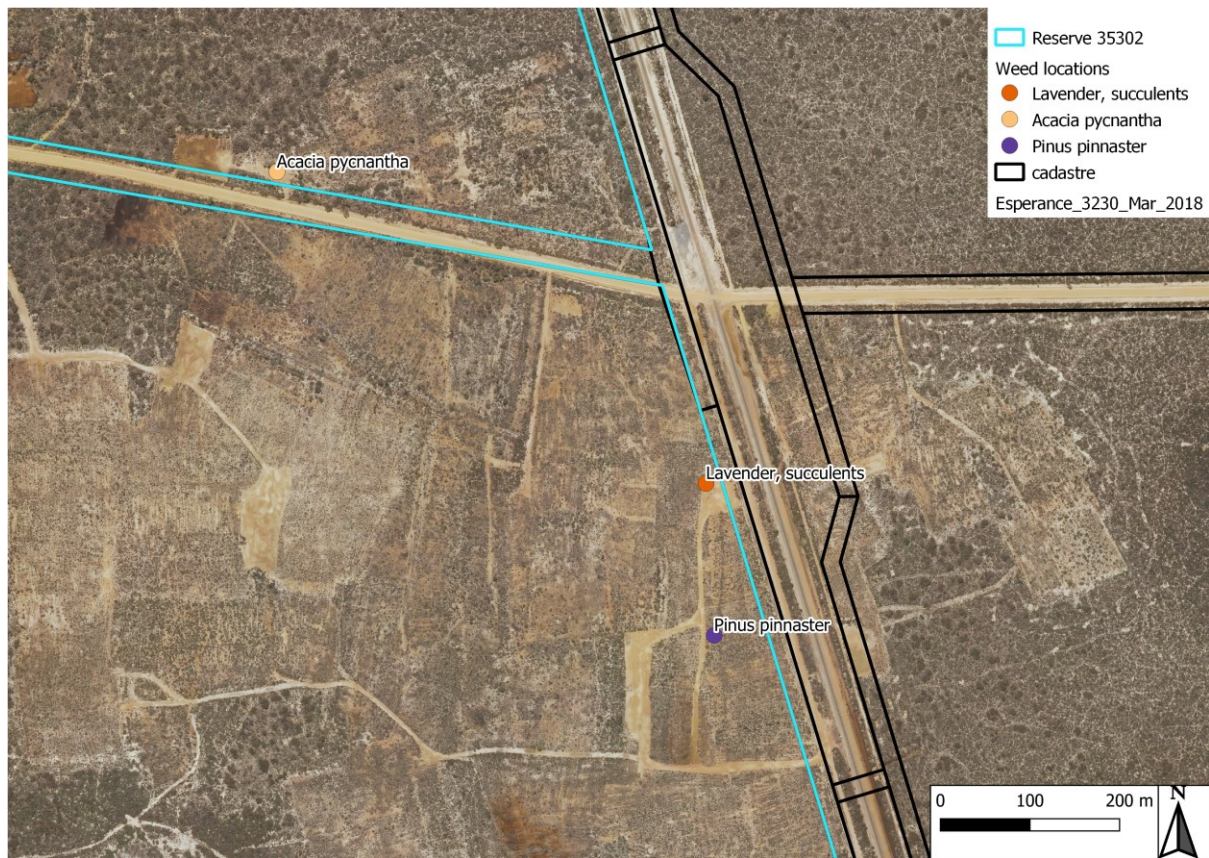


Figure 14. Location of weeds treated within the proposed offset site.

4 Viability (long-term threats to nature conservation values):

Salinity risk	Unclear, but may increase
Introduced plants	Weeds burden is low and apart from those dealt with in June 2022, restricted to the agricultural interface on the western boundary.
Introduced animals	Unlikely to change
Problem native plants	N/A
Problem native animals	N/A
Disease	No visual signs of dieback. The site was classified as Low Confidence Dieback Uninfested in 2008.
Fire viability	Bush fire threat is low due to buffers from the chain of salt lakes to the north, low vegetation and buffer from cleared agricultural land to the west
Competing land use	No threat
Lack of habitat	N/A

5 Conclusion

Reserve 35302, Lot: 1985 Pln: 91222 provides a valuable conservation offset. The reserve contains a substantial area (86.747ha) of the Threatened Ecological Community “Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia” which is in good to pristine condition. The reserve also contains nine species of priority flora and critical habitat for the Critically endangered species *Eremophila glabra* ssp. Scaddan, as well as containing the poorly conserved Beard Vegetation Association 47. Floral diversity is high with 138 species of flora recorded from Reserve 35302, however given the low level of sampling in both the 2017 and 2022 winter surveys this diversity is very likely to be underrated.

The conservation and intrinsic value of the reserve can be appreciated by walking through and observing the diversity of flora, the active birdlife and the tell-tale signs of mammal species such as echidna, kangaroo and emu, and the salt lake systems in the north of the reserve are especially pristine and scenic areas.

6 Appendix

6.1 Incidental species list

Table 5. Incidental species collected or observed in June 2017 and June 2022 within Reserve 35302

Family	Taxon	Weed	Conservation Status	Herbarium Ref
Aizoaceae	<i>Carpobrotus virescens</i>			
Aizoaceae	<i>Disphyma crassifolium</i>			
Anarthriaceae	<i>Anarthria humilis</i>			
Anarthriaceae	<i>Anarthria scabra</i>			
Anarthriaceae	<i>Lyginia barbata</i>			
Asparagaceae	<i>Lomandra mucronata</i>			
Asteraceae	<i>Argyranthemum frutescens</i>			
Asteraceae	<i>Conyza bonariensis</i>	x		
Asteraceae	<i>Podolepis capillaris</i>			
Casuarinaceae	<i>Allocasuarina thuyoides</i>			
Casuarinaceae	<i>Allocasuarina humilis</i>			
Cyperaceae	<i>Baumea juncea</i>			
Cyperaceae	<i>Caustis dioica</i>			
Cyperaceae	<i>Gahnia ancistrophylla</i>			
Cyperaceae	<i>Lepidosperma squamata</i>			
Cyperaceae	<i>Mesomelaena stygia</i>			
Cyperaceae	<i>Mesomelaena tetragona</i>			
Cyperaceae	<i>Neurachne alopecuroidea</i>			
Dilleniaceae	<i>Hibbertia racemosa</i>			
Dilleniaceae	<i>Hibbertia gracilipes</i>			
Ericaceae	<i>Brachyloma mogin</i>		P3	KSW8022 (south) KSW8422 (North)
Ericaceae	<i>Conostephium marchantiorum</i>		P3	KSW7522 (North) KSW8522 (South)
Ericaceae	<i>Leucopogon fimbriatus</i>			
Ericaceae	<i>Leucopogon carinatus</i>			
Ericaceae	<i>Leucopogon obtusatus</i>			
Ericaceae	<i>Leucopogon sp. Coujinup</i>			
Ericaceae	<i>Leucopogon tetragonus-decussata complex</i>			KSW772
Ericaceae	<i>Lissanthe rubicunda</i>			
Ericaceae	<i>Lysinema ciliatum</i>			
Ericaceae	<i>Styphelia breviflora</i>			
Ericaceae	<i>Styphelia epacridis</i>			
Ericaceae	<i>Styphelia lissanthoides or rotundifolia</i>		P3 or NT	KSW8222 (Fruiting) KSW8322 (Flowering)
Ericaceae	<i>Styphelia sp. South Coast</i>			
Ericaceae	<i>Styphelia woodsii</i>			

Fabaceae	<i>Acacia cyclops</i>			
Fabaceae	<i>Acacia gonophylla</i>			
Fabaceae	<i>Acacia aemula</i> subsp. <i>aemula</i>			
Fabaceae	<i>Acacia cochlearis</i>			
Fabaceae	<i>Acacia cyclops</i>			
Fabaceae	<i>Acacia gonophylla</i>			
Fabaceae	<i>Acacia myrtifolia</i>			
Fabaceae	<i>Acacia patagiata</i>			
Fabaceae	<i>Acacia profusa</i>			
Fabaceae	<i>Acacia pycnantha</i>	X		
Fabaceae	<i>Acacia saligna</i>			
Fabaceae	<i>Acacia sulcata</i> subsp. <i>planoconvexa</i>			
Fabaceae	<i>Daviesia lancifolia</i>			
Fabaceae	<i>Daviesia pauciflora</i>		P3	
Fabaceae	<i>Daviesia teretifolia</i>			
Fabaceae	<i>Daviesia lancifolia</i>			
Fabaceae	<i>Gastrolobium spinosum</i>			
Fabaceae	<i>Jacksonia spinosa</i>			
Fabaceae	<i>Templetonia retusa</i>			
Goodeniaceae	<i>Cooperhooikia strophiolata</i>			
Goodeniaceae	<i>Dampiera lavandulacea</i>			
Goodeniaceae	<i>Goodenia scapigera</i>			
Haemodoraceae	<i>Conostylis bealiana</i>			
Haemodoraceae	<i>Haemodorum discolor</i>			
Iridaceae	<i>Patersonia occidentalis</i>			
Juncaceae	<i>Juncus pallidus</i>			
Loranthaceae	<i>Nuytsia floribunda</i>			
Malvaceae	<i>Lasiopetalum rosmarinifolium</i>			
Myrtaceae	<i>Austrobaecka uncinella</i>		P3	KSW7422 (north) KSW8122 (south)
Myrtaceae	<i>Beaufortia micrantha</i>			
Myrtaceae	<i>Beaufortia schaueri</i>			
Myrtaceae	<i>Calothamnus quadrifidus</i>			
Myrtaceae	<i>Calothamnus gracilis</i>			
Myrtaceae	<i>Chamelaucium ciliatum</i>			
Myrtaceae	<i>Cyathostemon ambiguus</i>			
Myrtaceae	<i>Darwinia</i> sp. <i>Gibson</i>		P1	KSW7322 (South) KSW7622 (North)
Myrtaceae	<i>Eucalyptus halophila</i>			
Myrtaceae	<i>Eucalyptus occidentalis</i>			
Myrtaceae	<i>Eucalyptus pleurocarpa</i>			
Myrtaceae	<i>Eucalyptus rigens</i>			
Myrtaceae	<i>Eucalyptus incrassata</i>			
Myrtaceae	<i>Eucalyptus leptocalyx</i>			

Myrtaceae	<i>Eucalyptus rigens</i>			
Myrtaceae	<i>Kunzea salina</i>		P3	
Myrtaceae	<i>Leptospermum laevigatum</i>	X		
Myrtaceae	<i>Leptospermum spinescens</i>			
Myrtaceae	<i>Melaleuca brevifolia</i>			
Myrtaceae	<i>Melaleuca cuticularis</i>			
Myrtaceae	<i>Melaleuca dempta</i>		P3	KSW7922
Myrtaceae	<i>Melaleuca fissurata</i>		P3	KSW7822
Myrtaceae	<i>Melaleuca hnatiukii</i>			
Myrtaceae	<i>Melaleuca pulchella</i>			
Myrtaceae	<i>Melaleuca rigidifolia</i>			
Myrtaceae	<i>Melaleuca tuberculata</i>			
Myrtaceae	<i>Melaleuca undulata</i>			
Myrtaceae	<i>Micromyrtus elobata</i>			
Myrtaceae	<i>Micromyrtus imbricata</i>			
Myrtaceae	<i>Phymatocarpus maxwellii</i>			
Myrtaceae	<i>Taxandria spathulata</i>			
Myrtaceae	<i>Verticordia roei</i>			
Myrtaceae	<i>Verticordia vicinella</i>			
Pittosporaceae	<i>Billardiera fusiformis</i>			
Poaceae	<i>Amphipogon turbinatus</i>			
Poaceae	<i>Austrostipa pycnostachya</i>			
Poaceae	<i>Ehrharta calycina</i>	X		
Poaceae	<i>Eragrostis curvula</i>	X		
Proteaceae	<i>Adenanthos cuneatus</i>			
Proteaceae	<i>Banksia armata</i>			
Proteaceae	<i>Banksia nutans</i>			
Proteaceae	<i>Banksia obovata</i>			
Proteaceae	<i>Banksia obtusa</i>			
Proteaceae	<i>Banksia pilostylis</i>			
Proteaceae	<i>Banksia repens</i>			
Proteaceae	<i>Franklandia fusifolia</i>			
Proteaceae	<i>Grevillea oligantha</i>			
Proteaceae	<i>Hakea adnata</i>			
Proteaceae	<i>Hakea cinerea</i>			
Proteaceae	<i>Hakea corymbosa</i>			
Proteaceae	<i>Hakea laurina</i>			
Proteaceae	<i>Hakea lissocarpha</i>			
Proteaceae	<i>Hakea nitida</i>			
Proteaceae	<i>Hakea prostrata</i>			
Proteaceae	<i>Hakea trifurcata</i>			
Proteaceae	<i>Isopogon polycephalus</i>			
Proteaceae	<i>Lambertia inermis</i>			
Proteaceae	<i>Persoonia scabra</i>		P3	KSW7122

Proteaceae	<i>Petrophile fastigiata</i>			
Proteaceae	<i>Petrophile squamata</i> subsp. northern			
Proteaceae	<i>Petrophile teretifolia</i>			
Proteaceae	<i>Synaphea media</i>			
Proteaceae	<i>Synaphea petiolaris</i>			
Restionaceae	<i>Desmocladius flexuosus</i>			
Restionaceae	<i>Hypolaena</i> sp.			
Rhamnaceae	<i>Cryptandra myriantha</i>			
Rubiaceae	<i>Opercularia vaginata</i>			
Stylidiaceae	<i>Stylidium repens</i>			
Stylidiaceae	<i>Stylidium rupestre</i>			
Thymelaeaceae	<i>Pimelea cracens</i>			

6.2 Desktop Flora Search Results

Table 6. Threatened or priority flora identified by the desktop study to be present within a 20 km radius of the offset site, using Threatened and Priority Flora Reporting, WA Herbarium and Esperance District Threatened Flora datasets

Taxon	Conservation Status	Distance from site (m)
<i>Acacia diminuta</i>	P1	19257.4
<i>Beyeria physaphylla</i>	P1	9793.95
<i>Darwinia</i> sp. Gibson (R.D. Royce 3569)	P1	227.222
<i>Eucalyptus misella</i>	P1	9525.58
<i>Goodenia turleyae</i>	P1	11222.9
<i>Leucopogon remotus</i>	P1	15330
<i>Pimelea pelinos</i>	P1	11388.1
<i>Schoenus</i> sp. Grey Rhizome (K.L. Wilson 2922)	P1	16782.5
<i>Astroloma</i> sp. Grass Patch (AJG Wilson 110)	P2	7469.42
<i>Comesperma griffinii</i>	P2	18325.9
<i>Fabronia hampeana</i>	P2	10538.4
<i>Goodenia exigua</i>	P2	15484.2
<i>Hibbertia turleyana</i>	P2	8011.62
<i>Hydrocotyle asterocarpa</i>	P2	11252.1
<i>Hydrocotyle tuberculata</i>	P2	11350.8
<i>Leucopogon corymbiformis</i>	P2	6395.41
<i>Paracaleana parvula</i>	P2	17115.4
<i>Patersonia inaequalis</i>	P2	8011.62
<i>Spyridium mucronatum</i> subsp. <i>multiflorum</i>	P2	4387.32
<i>Tecticornia indefessa</i>	P2	17876.1
<i>Velleia exigua</i>	P2	15694.6
<i>Acacia bartlei</i>	P3	11208.3

<i>Acacia euthyphylla</i>	P3	13052.4
<i>Baeckea uncinella</i>	P3	13052.4
<i>Brachyloma mogin</i>	P3	1849.33
<i>Comesperma calcicola</i>	P3	15153
<i>Commersonia rotundifolia</i>	P3	8011.62
<i>Conostephium marchantiorum</i>	P3	119.549
<i>Dampiera sericantha</i>	P3	6479.73
<i>Dampiera triloba</i>	P3	15719.6
<i>Daviesia pauciflora</i>	P3	6463.36
<i>Desmocladus biformis</i>	P3	18733.5
<i>Eremophila chamaeophila</i>	P3	13052.4
<i>Eucalyptus famelica</i>	P3	16853.7
<i>Eucalyptus foliosa</i>	P3	3375.21
<i>Gonocarpus pycnostachyus</i>	P3	15535.3
<i>Goodenia laevis</i> subsp. <i>laevis</i>	P3	14811
<i>Isopogon alcicornis</i>	P3	217.577
<i>Kunzea salina</i>	P3	2261.81
<i>Melaleuca dempta</i>	P3	394.431
<i>Persoonia cymbifolia</i>	P3	11422.6
<i>Persoonia scabra</i>	P3	2462.09
<i>Pterostylis faceta</i>	P3	12075.4
<i>Styphelia rotundifolia</i>	P3	16133.5
<i>Trachymene anisocarpa</i> var. <i>trichocarpa</i>	P3	18920.5
<i>Caladenia arrecta</i>	P4	8442.05
<i>Darwinia polycephala</i>	P4	13052.4
<i>Eucalyptus dolichorhyncha</i>	P4	8441.98
<i>Eucalyptus preissiana</i> subsp. <i>lobata</i>	P4	13583.3
<i>Grevillea baxteri</i>	P4	66.336
<i>Melaleuca fissurata</i>	P4	11227.1
<i>Stachystemon vinosus</i>	P4	18733.5
<i>Eucalyptus merrickiae</i>	T	4314.41